

The Brief of Ancient Chinese Cities' Site Selections Based on the Disasters Preventions

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Abstract: The ancient Chinese cities have experienced a lot of natural or man-made disasters, and have accumulated huge amount of disaster prevention experience, especially the site selection ideology formed with the choice of the cities' locations, which continuously absorbed the thoughts of divination, Pragmatism location ideology and geomantic omen, and finally become mature. This ideology is based on the disaster prevention, and has built two levels which are the macroscopic "Shi" and the microscopic "Di". Thus the constructors can have macroscopic considerations and strategic judgments to the regional conditions and can have accurate responses to the cities' adaptability to the specific geographic patterns.

Key Words: *Ancient Chinese, Site Selection of City, Disaster Prevention*

1. Premise/Introduction

The real city in Chinese history originated from the early Western Zhou Dynasty (Eleventh Century B.C.) After King Wu conquered Shang dynasty, he promoted the Patriarchal Clan Power System and the Urban Construction & City Plan System, facilitating the form of the first batch of fully functional cities, of which the two capitals, Feng and Hao, are typical representations. From that time till the first Opium War (1840A.D.), the ancient Chinese cities have had a history of more than 3000 years.

During these 3000 years, Ancient China constructed about 4300 cities¹⁾, the disasters of war, flood, earthquake, conflagration and all the other kinds of natural or human calamities rose and ceased. The blueprints of the constructors at the beginning of site selections and constructions might be optimistic, cautious, magnificent or pragmatic, and they always countered with the unpredictable realities. But even so, most of these cities have overcome the challenges of those hash disasters, stayed with time going, extended their own sizes, developed the economics, and became the cities we are now living in. Unquestionably, the knowledge of site selections based on the safety issues appeared simultaneously with the cities, has been gradually developed, and has become the cornerstone of the cities' existence, development and continuation.

The main disasters to the cities generally include disasters of war, geologic hazard (mainly the earthquake), climatic hazard (mainly the flood) and accident disaster (mainly the conflagration). The number of wars happened is more than 6000²⁾, the number of earthquake occurred is 5649³⁾, which caused 2.5million people's death⁴⁾, and the number of other geographic disasters happened, such as landslides, ground subsidence and so on, is 660⁵⁾. In term of the cities, the most

dangerous climatic disasters are the flood, at the end of Qing Dynasty, the number of flood happened is 4600⁶⁾. The main form of the accident disasters is the conflagration. The destructive power of the conflagration is extremely tremendous, especially to the Chinese cities which were mainly constructed by wood. There were 231 conflagration disasters⁷⁾ only in Qing Dynasty.

These disasters continuously brought about heavy losses to the cities and also promoted the site selections of the Chinese cities becoming more cautious and comprehensive. The maturation process of the site selection ideology was also the maturation process of Chinese civilization. Unquestionably, this was an epic history. This article can only make primary discussion on the ideology in its source and basic structure of the disaster prevention.

2. Several sources of ideology for ancient Chinese site selections based on the disaster prevention

“Apart from the abandon of the old site, the city migration also involves the comprehensive analysis on both old and new sites. Therefore, city migration is similar to the site selection essentially. In addition, (the functions change) like the confirmation of governed city, the confirmation of the capital also involves the investigation and analysis on the surrounding environment, which is also similar to the site selection to some extent⁸⁾.”

During the phase of site selection, the constructors will not only consider the factor of disaster prevention, but also the factors such as the surrounding political situations, city grade and standard, transportation convenience, hinterland relations, regional economies, and even urban morphology & landscape aesthetics. But just like a life form, “safety” is always a fundamental appeal.

From the perspective of the disaster prevention, the ideology for ancient Chinese site selections has experienced from formation to the maturation for a very long period. Its sources include several following aspects:

(1) Divination

Divination is a behavior of witchcraft, is an effort that human make to try to influence on the nature. Just like what Arthur Fredrick Wright said, “All the ancient civilizations had the convention of choosing auspicious places and had the symbolic systems that connected the city and all its parts to the Gods and natural forces”⁹⁾.

The pre Qin Period, one of the early Chinese civilizations, the starving ancestors could only crawl under the “feet” of the nature, worship the mysteries that they could not understand, and ask the advice of the gods reverentially. Basically all the important decision stemmed from the result of divination. Oracle, the inscriptions on bones or shells, is the script used to record the sacrifice activities. And when it comes to the site selection, the ancestors also needed the “feedback” explanation from the flamen to make sure whether the selected site was auspicious or ominous. The earliest Chinese site selection record appeared in <Book of Songs. Da Ya. The Vines> :“Fertile was Zhou’s plain, With violets sweet as sugarcane. He began to plan and design, By tortoise-shell he did divine. It hinted: To stay here and now, So he housed there with his frau”. The ancestor of Zhou GugongTanfu led Zhou people moving from Bin to QinshanZhouyuan. When he investigated the geographical environment, he found the soil of this place was fertile, the violets were as sweet as sugar. After planing and designing, he did a divination devoutly, and finally constructed the palaces and temples.<Book of Songs. Da Ya. Wen’s Popularity> also recorded, after King Wen constructed the Capital Feng, King Wu did the expansion (about 1045 B.C.), moving the main functions of the city to the Capital Hao on the other side of the river. “Wen examined and divined, To settle in Hao he did decide. The shell proved him right, Wu completed the city might. He was a real king bright!” The site selection of Capital Hao also experienced the phase of divination.

(2) Pragmatism location ideology

The tradition of using divination to select sites and construct cities basically came across the entire pre Qin Period, yet the grand united Qin Dynasty started a new era of ancient Chinese site selection. Because of the unification of the country, a large number of cities appeared in the region outside the midstream of the Yellow River, such as Fan Yu, Bo Luo, Jie Yang, and Long Chuan¹⁰⁾. These cities were constructed by foreign troops with strong colonial intentions. The results of divinations conducted by the local tribes could not scare the city constructors, but the thoughts of the pragmatic legalists, occupying an leading position in the empire¹¹⁾, got further practiced and implemented. The basic site selection principles including “Fronting water and sun with the hills on the back” were insisted in the constructions of new cities. Of course, the source of this pragmatism location ideology had already appeared before Qin unified China, such as the famous statement to the topography utilization in <Gwancius. Zhongma>: “When the constructors build the city, the site will be chosen either under the mountains, or near the rivers. It cannot be too high to be become draught, thus the adequate water sources would be guaranteed. It also cannot be too low to be flooded, thus the constructions of furrow dam could be saved.”, and the corresponding practice, such as the site selection of Chengdu city in 311 B.C¹²⁾.

(3) Geomantic Omen (Feng shui)

When it was late Eastern Jin Dynasty (around 300A.D.), the indescribable term in the knowledge of site selection, the so-called “Place Choosing Methodology”---”Feng Shui”, appeared and gradually improved. The theorem of geomantic omen involves in ancient fetishism, landscape aesthetics with Chinese characteristics, the Confucian etiquette and Neo-Confucianism, original geological engineering, aerography, metrology and other basic content, which includes not only logical and rational parts, but also mysterious and perceptual parts.

Geomantic masters claimed that because of the interaction between nature and mankind, the natural law (landscape patterns) and humanism (human’s health and luck) were closely connected. The happen and avoidance of the disasters depended on whether the Geomantic Omenpattern was good or not. The “Dragon, Sand, Cavern, Water, Direction” and other large scale spatial framework factors mentioned in geomantic omen are actually a series of graphic languages, which not only show the connection between the ideal location of the city and its surrounding landscape, but also is a key to judge a “good” geomantic pattern.

Geomantic omen does include strained, ridiculous, superstitious witchcraft parts¹³⁾, but it also includes some simple and rough scientific parts like facing ground, tasting water, testing rocks and viewing wood. Yet a large many site selection practices with rational and scientific disaster prevention and alleviation was implemented on the behalf of geomantic test. For example, the behaviors of checking geological fault zones and avoiding geological disasters are called “Dragon Dowsing” by geomantic masters, namely investigating mountain trends, judging so called the trend of ancestry’s dragon venture. Another example is the behavior of investigating the relationship between the potential site (cavity field)and the shapes of its surrounding mountains, which is called “sand investigation”, and the geomantic masters use “Chi” to define its quality.

Geomantic tests were initially used for the site selections for cemetery or graves. After Tang and Song Dynasty, more and more site selections for cities involved in the geomantic tests, including Peking, Nanjing and other big cities.

3. Two levels of site selection ideology based on disaster prevention

Each subject produced under the modern scientific system, has the inborn exclusiveness and excessive self-esteem. It seems like all the events can be established rationally only with the explanation of the subject itself. For instance, for the reason why Sui Dynasty did not continue to use site of the old Chang’an city, Geographical Society consider it is because of the utilization of the geographical conditions including river systems, bench terraces and hummocks, the Hydraulic Engineering Society consider it is because of the convenience for shipping and flood prevention, the Biological Society consider it is due to the results of regional ecological environment change (the water quality of the

original site decreased dramatically), while other possible explanations include national relations, military situation, food security and so on.

Overly decomposing the complicated systematic topic and refining research content may cause the loss of the system's original appearance. Just like what Lao Zi said: "If one has no desire, he can see the wonder of things appeared; If one has desire, he can see the outer fringe of the things operated"¹⁴⁾.

The site selection based on the disaster prevention is a systematic ideology. it's advised that its research content should not be divided by subjects and professions but by the size of scale, namely macroscopic and microscopic levels.

(1) Macroscopic "Shi"

In ancient China, thousands of cities required site selections, the disasters they faced might be tremendously different, such as timing, military strength, size, climate, Yin & Yang, temperature, topography, physiognomy, geomantic omen, river, lake, vegetation, precipitation, water head, soil, farmland, roadway, shape and structure, pattern and so on. The first step of site selection is the strategic decision based on macroscopic level, which is called "Shi".

"Shi" is the macroscopic considerations and strategies of site selections, is the holistic and systematic thinking, is a large scale concept, and is a subjective judgment." Shi" is recognized in <Origin of Chinese Characters> as: "Shi is a huge power." The original meaning is "authority, influence", and can be extended to the meaning of "position, location (of the human or the place)".

"Shi" is to prevent the crisis from occurring in the first place, and is to pre solve the potential problems. "Shi" includes construction timing, economic strength, the political situation patterns of surrounding regions, designated functions, urban sizes, city grades. "Shi" is the macro considerations and strategic judgment at the early stage of the site selection. Most of the man-made disasters, such as the disaster of the war¹⁵⁾, long-term lack of food, all come from the deterioration of the situations and the inconvenience of the transportation. The ramparts and ditches are the last measures to prevent the disasters of the wars, yet the site selections should comply to the surrounding situations, pre judge the situations, avoid the appearance of the disasters, which is the best measure to prevent and alleviate the disasters.

"Shi" cannot be counted or quantized, the judgment and analysis of the "Shi" is a reflection of the decision maker's personal experience and abilities. The controls of "timing, location, size, pattern, stage" of the site selection and construction differ from man to man, the weights of each factor that the decision maker should consider are different, there is no obvious right or wrong during this process.

The city of Peking in Ming Dynasty was atypical example. The third emperor of Ming Dynasty Chu-Ti removed the capital from Nanjing in southern China to Peking in northern China to protect the imperial throne that he seized from his nephew. Peking was his feudal fief, so this decision was correct at that time. Peking was a very safe place, and also a bridgehead used to attack the remaining forces of Mongolia. However, this situation did not last long. 25 year after Chu-Ti died (1429 A.D.); Mongolian surrounded Peking, and nearly destroyed the empire. It was a risky and arbitrary decision to select the site of the big cities, especially the capital city at the edge of the Great Wall. Ming Dynasty kept staying under the high pressure of nomad since Chu-Ti's death until the Jurchens entered Shanhai-Guan, (1644A.D.) which declared the end of the empire.

(2) Microscopic "Di"

The macroscopic judgment of the disaster prevention ideology cannot be directly used to select the sites. For example, in Western Han Dynasty, the counselor Loujin suggested the emperor Liubang to select the site of the capital in the central Shanxi plain, the reason is that: "The region of Qin has the mountain on its back, surrounded by Yellow River, the frontier fortresses around can be used as the solid defense lines. Even when there appears any emergency, the mighty army can prepare for battle instantaneously"¹⁶⁾. Knowing this point still cannot confirm the specific location of Capital Chang'an. If we don't investigate the microscopic environment, the site of the Capital Chang'an (36km²) might

still have many possible locations in the central Shanxi plain.(The area is about 34000 km²)

From the perspective of macroscopic region, the city site is only a point. Then for the region around the site, the city becomes a surface. This requires the constructors not only considering the site's safety and rationality on the macroscopic level, but also considering the expansion of the city pattern, the construction of the roads structure, the combination of the topography and so on, which are the needs of the microscopic "Di".

We need to consider the adaptability on the specific geographic pattern, which is the microscopic level of the site selections, called "Di". It can be divided into two parts, geographic environment and climatic condition. The former one includes mountains(Shape, topography, altitude), water(flow, conservancy, capacity, quality), soil (fertility, cultivation area, bearing capacity), channel(mountain path, Potential road, dock ferry) and other factors. And the latter one involves air humidity, wind level and direction, Yin and Yang, natural disasters and so on.

What "Di" investigates is the geographic and environmental factors of the site selection safety. If the climate is moderate, the air is humid, then the agriculture will be developed, the resources will be rich, and the famine disasters will be away. Yin is on the back and Yang is on the front, air flows actively, then the light is adequate, miasm(an unwholesome atmosphere) is eliminated, and epidemic disaster is away. What's more, rainstorm, drought, hail, earthquake and plague of locusts will have a low frequency of occurrence, and the possibility that the city will suffer these natural disasters in the future is very low.

In order to avoid the disasters, ancestors contentiously summed up the experience. From the early Zhou Dynasty when JiFa divined, to the Warring States Period when Wu Zixu "tasted water" during the construction of Suzhou, to the Eastern Jin Dynasty when GuoPu weighing the weight of the soil¹⁷⁾ for the site selection of Wenzhou, to the Sui Dynasty built the Grand Canal to ensure the food security of Luoyang. Overall, the site selections of ancestors gradually transferred from the reverence for nature to the adaptability to nature, and finally to the proper change of nature.

Take the site selection of Chengdu as an example. From Sanxingdui to Jinsha to Pi County, the capital of ancient Shu was always elusive on the Chuanxi Plain. The migrations during different periods were mostly due to the threat of the flood. Until 50 year after Zhangyi conquered ancient Shu, Libing built the Dujiangyan water conservancy, subjugated the Mingjiang River coming from the snow mountain, completely improved the hydrological conditions of Chengdu, and promoted the stable harvest of regional agriculture. The superiority of the Chendu site on the disasters prevention was really outstanding. But it seems that this site exists huge threat, which is that there is only a single source of water for the megalopolis with the population level of ten millions. The security of drinking water cannot be guaranteed. Of course, this was not a problem 2300 years ago, even the underground water would be enough for all the residents as the drinking water source at that time.

What is worth being mentioned is that the relation of the geographic factors such as mountain shapes, trends and rivers, and disasters preventions of the cities are even more complicated. This kind of spatial elements was called geomantic pattern in the ancient China. With the unique evaluation system and the special pattern construction, geomantic omen not only has the functions of aesthetic standard, etiquette, and psychological implication, but also promotes the construction of the disaster prevention system and pays close attentions to the relation of the cities to the river as well as the relation of cities to mountains during the site selections.

4. Conclusion

The site selections of ancient Chinese city have a very long history. Unfortunately, there is a tradition of ignoring the technology records and inheritance. The experience of site selections especially the disaster preventions has never been systematically concluded with the classification of the different subjects. It was only recorded sporadically in each dynasty. Among this, there also existed some mysterious components, which was not consistent with the modern scientific system.

However, the disasters prevention ideology of the ancient city's site selections has combined several ideological sources with continuous improvement. It has integrated and systematic characteristics: It is an overall consideration with different scales, a combination of “Shi” and “Di”, a combination of macroscopic and microscopic levels, a combination of short term and long term. It is intelligent and pragmatic thought with the reflections to all the disasters as well as the pre avoidance to the potential threats.

Reference and Annotation

- 1) Chen Zhengxiang, Chinese Cultural Geography, Chapter 3, the city of China, 1981.
- 2) Scholar GuZuyu verified, from the battle between Yellow Emperor and Chi You at Zhuolu field, to invasion of Japanese pirates in the middle of Ming Dynasty, the total number of the wars happened in ancient China is 6192, which is 2 wars per year. GuZuyu<Essentials of geography for reading history>, Zhonghua Book Company, 2005.
- 3) From 2221B.C. To 1998 A.D., including 1014 earthquakes with the level above 6. Wang Li, Xu Wei, Wang Jingai, <China Historical Seismicity Spatial Difference>, August, 2003.
- 4) <China Earthquake Disaster Condition Summary>, Lou Baotang, 1996, p222.
- 5) The time span of this statistics is from 2598 B.C. To 1910 A.D., including 494 landslides disasters and 166 ground subsidence disasters. <Ancient China Landslides and Earth Subsidence Disasters Chronology>, Cheng Qiangong, September, 1990, P76.
- 6) <History of China Disasters> (Yuan Zuliang,2008.9).
- 7) <History of China Disasters><Qin Dynasty>(Yuan Zuliang, Zhu Fengxiang 2008.9) P190.
- 8) Cheng Yinong, <Research Methods of Ancient Chinese Cities Site Selection>, Geographical Science China, 2012, 01 Volume 27
- 9) G.William.Skinner, <The Cities in Late Imperial China>, Zhonghua Book Company, 2000.
- 10) These four cities were constructed by Qin generals Ren Xiao, Zhao Tuo in 214 B.C., when Qin Dynasty was reclaiming southern frontier, which was belong to the newly established Nan Hai county.
- 11) Dong Zhongshu proposed “Rejecting the other schools of thought and respecting only Confucianism”, which was put forward formally in 134 B.C.
- 12) Chengdu was constructed by Zhang Yi, and was never changed during the last 2300 years. The site is located on the watershed between Minjiang River and Tuojiang River. Its topography is above both of the river systems and it is equipped with Dujiangyan water conservancy project at the distance of 40 kilometer. Soaked when it's drought, Blocked with it's raining, and Chengdu has never been threatened by flood.
- 13) Yang Liu holds the opinion that witchcraft was included in the geomantic systems as an art of necromancy, which originated after late Tang Dynasty, started by Yang Yunsong. YangLiu<Fengshui and Ancient Landscape Construction Research>, P303.
- 14) Lao Zi<Tao TeChing>, Chapter One.
- 15) Including the famine due to the war or other human behaviors, conflagration, flood.
- 16) Sima Qian <Historical Records> Volume 99, Liu Jing Shu, Sun Tong Biography, 39th.
- 17) Wu Qin Zhou <City Planning>2000, Volume 24, the Experience and Reference of Ancient Chinese Cities' Site Selections and Constructions.